Hospital Beds: A Primer for Counting and Comparing.

Introduction

The noisiest issue in the public debate on health care rests on questions that seem so simple. How many hospital beds are there in Australia and are there enough?

The community remains fixated on capital infrastructure (hospitals and beds). Doctors and patients want more beds, official reports vary on the need for more hospital beds and governments and political leaders of all persuasions promise more. In response to the perceived crisis in health care and the pressure of Access Block on Emergency Departments, many jurisdictions have begun to expand bed numbers.

It is apparent however that at least in the public arena there is lack of clarity about what is being counted and compared, often confusing furniture with capability. The aim of this paper is to describe hospital bed capability, evaluate Australia's bed capability against international standards and to consider the impact of demographic and clinical changes on future demands for beds in Australia.

What is a hospital bed?

In making any comparison of bed numbers, it is important to be comparing the same thing. However, in practice this is difficult to achieve. Traditionally the hospital bed count was a simple enumeration of the number in the wards of a hospital at a point in time. However the count was 'flexible' or even 'rubbery'. Spaces with capacity for beds might be included. Some hospitals counted only beds they considered to be funded, others only those they could fully staff.

The Australian Institute of Health and Welfare defines "available beds" as a "bed that is immediately available to be used by an admitted patient or resident if required." It specifically excludes surgical tables, recovery trolleys; delivery beds and emergency stretchers which are not generally used for inpatient care [1]. However, from a clinical operations perspective, what is relevant is 'bed capability' which is a concept which incorporates not just the physical item of furniture but also the services to accommodate and support a patient.

Such capability is not uniform throughout the day, week or year. Many hospital beds in both the public and private sector, particularly those in day procedure units, are only routinely operated during normal working hours, so the physical count is different to the operating capacity. Many facilities vary their capability in accordance with demand on a daily or seasonal basis. Turnover in a day-hospital bed is more than in an overnight bed (a number of patients may be treated in a single day-hospital bed on any given day).

In addition, beds are not equal. Specialty beds (e.g. ICU beds) form subsets of the overall bed capability that have their own particular demand and supply profile [2] [3]. Depending on the need for different types of bed capability there are times when the particular capability is not available to meet the need. For example, if elective surgery requires a post-operative intensive care bed, then increasing ordinary overnight beds alone will not necessarily increase productivity. Similarly, many patients could be transferred during their stay to lower intensity but more appropriate sub-acute beds with dedicated rehabilitation capacity thereby increasing overall productivity. The efficient use

of hospitals beds is also linked to the availability of community care services which vary in type and capacity between jurisdictions.

It is also important to distinguish bed capacity which is fully utilisable from that which isn't. Beds are not evenly distributed across Australia with higher ratios of beds to population in rural and remote areas than urban areas. In rural areas there are significant number of hospital beds which cannot be fully utilised because of lack of local demand and clinical capability.

National and international trends

Despite the counting difficulties, it is evident that there has been a decline in bed availability throughout almost all developed countries [4]. After taking population into consideration in Australia there has been a real reduction in available hospital beds of 14.6% over the last fifteen years; a 22.9% reduction in public hospital beds (Table 1).

This decline was in part driven by a reduction in relative demand for inpatient beds resulting from improved clinical technology, changed models of care including greater use of day procedures and enhanced community based services and support [5, 6]. This resulted in significant reductions in length of stay which initially produced a decrease in demand for overnight inpatient beds. However, this component of reduced demand has probably now been overtaken by the increased demand associated with population ageing and increased patient acuity.

The distribution throughout the system is uneven further aggravating the access issues. Of the 762 public hospitals, 29% are described as medium or larger (generally more than 50 beds). These hospitals account for 80% of public hospital beds [7].

Complicating this picture further is the relationship between acute, subacute and long term residential aged care bed capability. As of 30th June 2008, there were 175,472 residential aged care places and a further 48,483 community aged care support packages [8]. While the number of residential aged care places has increased between 1995 and 2008 by 40,662, the ratio per 1,000 people over 70 years of age has declined from 92.2 to 87.7. With the addition of community based packages the ratio has increased substantially but it is less likely that community packages are a reasonable substitute for acute care beds. Projections suggest shortages of aged care beds between 2010 and 2020 before demand relatively declines [9]. This shortfall has immediate impacts on acute hospitals, with acute beds being used to house patients requiring residential aged care.

Table 1: Bed Capacity in Australia 1993/94-2007/08

	1993/94	2007/08	%Difference
Hospitals			
Public hospitals	746	762	2.1%
Private hospitals	440	552	25.5%
Total	1186	1314	10.8%
Available or licensed beds			
Public hospitals	61260	56467	-7.8%
Private hospitals	21241	27768	30.7%
Total	82501	84235	2.1%
Population(thousand)	17760.0	21237.9	19.6%
Beds per 1,000 population			

Public hospitals	3.4	2.7	-22.9%
Private hospitals	1.2	1.3	9.3%
Total	4.6	4.0	-14.6%

Sources:

1. Australian Institute of Health and Welfare 1999. Australian hospital statistics 1997–98. AIHW cat. no. HSE 6. Canberra: AIHW.
2. Australian Institute of Health and Welfare 2009. Australian hospital statistics 2007–08. AIHW cat. no. HSE 71. Canberra: AIHW.
3. Australian Bureau of Statistics 2010. Australian Demographic Statistics.

All accessed March 23, 2010 at http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3101.0Jun%202009?OpenDocument

These trends are consistent with changes in like countries. Australia's current average length of stay is slightly less than the OECD average [4], however when matched for diagnostic groups, which minimises differences due to variation in condition complexity, the differences are more significant (Table 2). Australia has a slightly higher rate of hospital separations per 1000 population (fewer when matched diagnostically) and fewer beds per 1,000 population.

Table 2 Australia compared with OECD Average

Indicator	Australia	OECD average
Av. Length of stay	5.9 days	6.5 days
Av Length of stay Acute Myocardial Infarction	6.2 days	7.4 days
Separations /1000 population	162/1000 population	158/1000
Separations per 1000 population circulatory diseases	17/1000 population	20/1000 population
Beds/1000 population	3.5/1000 population	3.8/1000 population

Source: OECD Health at a Glance 2009 [4]

Thus while the reduction in bed availability in Australia is in accordance with international trends and improved efficiency, the impact of population growth and ageing has resulted in increased demand which has outstripped the rate of efficiency improvements . This increased demand impacts not only on total bed demand but also more specifically on specialist services such as ICU that have been created specifically to enhance quality of care. The overt expression of this reduced availability of inpatient beds (Access Block) is ED congestion and undesirable waiting times for elective surgery.

Projecting need for beds

Probably the most important and under-estimated factor in projecting bed demand is the impact of ageing of the Australian population. Persons over the age of 65 account for 13% of the population but 39% of all hospital admissions [10]. This factor alone probably accounts for the majority of the

observable variance. However the picture is unclear and detailed analysis will be necessary in planning future bed capability so as to disentangle the impact of acute, subacute and long-term residential capacity. While forecasting the number of hospital beds does not involve the complexity of modelling climate change, it is subject to many of the same influences and thus similar complexity. Future planning will depend on predictions of changing clinical practice and the ability of our society to provide community alternatives that meet the patients need. We also need to plan within an environment of a market driven private system and the managed public sector.

There are many factors that need to be taken into consideration in future health planning and hospital bed numbers is only part of the picture. It would be highly beneficial if such planning were to step away from a fixation on capital infrastructure and focus more on the patient experience and efficient pathways of care. [11]

Finally, the total bed numbers do not reflect availability. Simplistic overall occupancy rates (e.g.85%) do not necessarily reflect the complexity of the underpinning science or the planning and management required to deliver an efficient and effective health system. [12]

Conclusion

Activity-based funding as proposed by the National Health and Hospitals Reform Commission and the Rudd Government will fund a given level of activity weighted for complexity which will convert into funded bed capability. While additional beds are needed to reduce the current system wide pressures, it is also necessary to continue to correct or adjust the bed capability, to improve bed access and reduce the level of 'noise' that this issue creates in the system. We may also need to consider more flexible work practices so that peaks in demand may be accommodated.

The public discussion needs to move from bed numbers to funded bed capability (perhaps weighted bed capability; weighted by the % of time occupied) Only then will there be common metric to debate how much governments have or have not met certain needs and what are the likely future needs. What is needed is a well considered and planned approach to bed capability that takes into consideration all relevant factors so as to avoid the mistakes of the last two decades.

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